Professor Forbes discussed at some length the details of his experiments, which confirm the conclusions reached in my experiments, in an address delivered at a meeting of the Central Illinois Horticultural Society during last August. (*Prairie Farmer*, August 11, 1888.) Professor A. J. Cook, of the Michigan Agricultural College, also announces, in Bulletin No. XXXIX., similar results.—*Clarence M. Weed, Ohio Agricultural Experiment Station.*

SMITH'S MONOGRAPH OF THE SPHINGIDÆ OF TEMPERATE NORTH AMERICA.—Parts II. and III. of the current volume of the *Transactions of the American Entomological Society* are devoted to a "Monograph of the Sphingidæ of Temperate North America," by Mr. John B. Smith. This paper makes a volume of nearly 200 pages. It appears to be very complete, and very carefully written. The synonymy of each species is given; the adult is fully described, and descriptions of the early stages are also given whenever they are known. The work abounds in valuable critical notes. Analytical keys for the separation of genera and of species are furnished. The paper concludes with a synonymical list. Eighty species are enumerated in this list. This work should be in the hands of every student of American Lepidoptera.

EMBRYOLOGY.[1]

DEVELOPMENT OF MELOE.—Josef Nusbaum describes briefly (*Biol. Centralblat.*, VIII., p. 449-452) the development of the oil beetle, Meloe. This form is very convenient for embryological studies as it breeds well in confinement and lays little piles of eggs, all the eggs in a single pile developing synchronously. The segmentation nucleus is central and the cells resulting from the segmentation migrate slowly to the surface, the protoplasm forming a reticulum in the meshes of which the yolk is embraced. Some of these cells reach the surface to form the blastoderm while others remain behind to form "yolk cells." On the third day the ventral plate and the rudiments of the amnion appear very early the ventral plate becomes segmented, and paired appendages appear on every segment of the body. The primitive groove appears at the same time as the amnion and develops from behind forward. It soon closes and forms a tube with a very narrow lumen behind, in front a solid cellular in-pushing. This is regarded as gastrulation, and the portion thus invaginated as ento-mesoderm or primary entoderm,

[1] Edited by Prof. John A. Ryder, Univ. of Penna., Philadelphia.

from the hinder portion of this cells, are cut off, which wander in and join the "yolk cells," but have nothing to do with the formation of the mesenteron. The remainder of the primary entoderm differentiates into two large lateral and a middle solid longitudinal band, and in the former there appears in each segment a cavity. The outer wall of this cavity forms the somatopleure, the inner the splanchnopleure and epithelium of the digestive tract. This inner wall soon separates completely from the outer in the middle line, and there becomes two-layered, thus developing both entoderm and splanchnopleure. These lateral bands of entoderm now unite with the middle one and soon enclose the whole yolk and the "yolk cells" which latter later degenerate and are absorbed.—*J. S. K.*

MICROSCOPY.[1]

VITAL INFUSION OF NERVES WITH METHYL-BLUE.—Prof. Ehrlich's[2] experiments in staining nerves with *methyl-blue*, mark the second great advance in staining *living* tissues. The discovery of a veritable nerve-stain, that acts *intra vitam*, has already led to the settlement of many disputed points, and promises to furnish a means for deciding the problem of nerve-endings. The well-known color-reaction induced in newly formed bone-substance as the result of madder-feeding, is outshone by this wonderful reaction between methyl-blue and the axis-cylinder.

According to Ehrlich two conditions are necessary in order to get the methyl-blue reaction: These are (1) *saturation with oxygen* and (2) *alkaline reaction*. The first condition can be secured only by free exposure of the object to the air. If a cover-slip is used, the air is thus excluded, and the stain rapidly disappears.

As to the second condition, it is known that nerves at rest have an alkaline reaction. It is necessary, therefore, to experiment on *resting* nerves. The state of rest may be forced by severing the nerves before infusion with methyl-blue, or by poisoning the animals with curare. The nerve-endings of the retina may be studied on animals that have been kept some time in the dark before infusion. The number of nerve terminations that stain under ordinary conditions is, however, so great, that a wide field for histological investigation is open to us without having recourse to the expedients just mentioned.

[1] Edited by C. O. Whitman, Director of the Lake Laboratory, Milwaukee.

[2] P. Ehrlich. Ueber die Methylenblaureaction der lebenden Nervensubstanz. Deutsch. med. Wochenschr., 1886, No. 4.